

# PATENT SPECIFICATION

DRAWINGS ATTACHED

L173.019



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## COMPLETE SPECIFICATION

### Improvements in or relating to methods of Making Sliding Clasp Fasteners

We, LIGHTNING FASTENERS LIMITED, a British Company, of Kynoch Works, Witton, Birmingham 6, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to method of making sliding clasp fasteners and is an improvement in or modification of the invention described in the complete specification of Patent No. 948,794.

In the complete specification of the above patent is described a method of manufacturing sliding clasp fasteners of a kind comprising a pair of tapes each provided with a series of teeth to form a stringer, a slider arranged to be movable along the stringers and to take the teeth of the respective stringers into and out of engagement with one another, and top and bottom stops provided on the stringers to prevent removal of the slider. This method comprises assembling lengths of toothed tapes together with the teeth engaged, cutting apertures in the assembled tapes at each of a number of positions along the tapes, each aperture extending over a number of the engaged teeth and being large enough to permit a slider to be inserted therein, inserting at least one slider in each aperture and mounting same on the teeth, securing plastics material to the assembled tapes in the vicinity of the apertures either before the aperture cutting or after mounting of the slider, and providing end stops on the stringers.

According to the present invention, there is provided a method of manufacturing sliding clasp fasteners from two lengths of stringers, each having a length of carrier tape supporting a row of coupling elements, comprising locating the two lengths of stringers in side-by-side relationship with the coupling elements of the lengths of stringers lying adjacent to one another cutting pairs of opposed recesses in

adjacent edges of the lengths of stringers at each of a plurality of positions spaced-apart along the lengths of stringers, each recess extending over a plurality of coupling elements of each length of stringer to divide said row of elements of each length of stringer into successive series of elements, securing plastics material to the lengths of stringer in the vicinity of the recesses after cutting of the recesses, and then inserting at least one slider between each pair of opposed recesses and mounting it upon a series of coupling elements of each length of stringer.

The plastics material secured to the lengths of stringers may extend across and cover opposed recesses, in which case apertures are subsequently provided in the plastics material coincident with the opposed recesses. Alternatively, plastics material having apertures preformed therein may be located around opposed recesses and secured to the carrier tapes.

Preferably the plastics material at at least one end of a recess is formed into an end stop for a fastener.

In the above methods of manufacturing sliding clasp fasteners according to the invention, the coupling elements of the two lengths of stringers may lie in interengaged or disengaged relationship during cutting of the opposed recesses.

The invention also includes a sliding clasp fastener manufactured by the method defined above according to the invention.

One embodiment of the invention will now be described by way of example and with reference to the accompanying drawings in which:—

Figure 1 illustrates a sliding clasp fastener, and

Figures 2 to 5 are plan views of two lengths of stringer showing different stages in the manufacture of the fastener of Figure 1.

An individual sliding clasp fastener of

[P. 2]

known construction (Figure 1) comprises two stringers, each stringer generally denoted by numeral 1, comprising a series 2 of coupling elements 3 formed from a continuous plastics filament. Each series of elements is secured to an edge of a cotton carrier tape 4 of its respective stringer by a line of stitching.

A slider 5 is provided for engaging and disengaging the two series of elements of two stringers in well known manner, and top and bottom fastener end stops 6, 7 respectively, are provided at the ends of the fastener to prevent removal of the slider from the elements.

To manufacture individual fasteners of the above construction, two lengths of stringers 1a (Figure 2), each comprising a length of tape 4a and a row of coupling elements 3 and sufficiently long to allow for continuous manufacture of individual fasteners from the lengths of stringer, are passed through a fastener making machine (not illustrated). The two lengths of stringers 1a are fed in side-by-side relationship and at equal speeds through the machine with the coupling elements 3 of the lengths lying in engagement with one another.

As the lengths of stringers proceed through the machine, they pass through a recess forming station in which pairs of opposed recesses 8 (Figure 2) are provided at spaced apart positions along the adjacent edges of the lengths of stringers, each pair of recesses extending over a plurality of coupling elements of each stringer length to form the coupling elements into successive series 2 of elements of the length required in the finished individual fasteners and each pair of recesses 8 has a length in the longitudinal direction of the lengths of stringer sufficient to provide tape ends of a required length for two successive individual stringers.

After passing through the recess forming station, the lengths of stringers 1a are provided with strips 9 of plastics material (Figure 3) which are moulded to the assembled lengths of stringers on both surfaces of the lengths of tape, each strip being located in the vicinity of a pair of recesses 8 and extending across and covering the pair of recesses. Each strip 9 of plastics material bridges the lengths of stringers and is sufficiently large to form a border around its respective pair of recesses. The plastics material used for the strips may be nylon or other plastics material that can be secured to the cotton tape by heat and pressure during moulding, e.g., by high frequency. In the same moulding operation top bottom end stops 6, 7 respectively, are formed integrally with each plastic strip at each end of the strip, the top stops 6 being provided for one individual fastener and the bottom stop 7 being provided for a succeeding individual fastener. Each top stop is wedge-shaped in a longitudinal cross-section and tapers towards its adjacent recess in the associated stringer whereby, in a following operation, a slider 5 may be

passed over the top stops in the direction away from the recesses 8 and onto the coupling elements 3 of the fastener lengths, but prevent the slider being removed from the elements once it has been positioned thereon.

After forming the end stops, apertures 10 are provided in the strip 9 of plastics material (Figure 4), these apertures being in alignment with the pairs of recesses 8 of the lengths of stringers so that a border of plastics film covers each length of tape at the edges of each recess to provide a reinforcement to prevent fraying of the cut edges of the tape at the recess. During this operation, the bridging part of each strip of plastics material extending from one tape length to the other between the top stops is severed as indicated at 11 to separate the top stops.

A slider 5 is then inserted into each aperture 10 and between each pair of opposed recesses 8, each slider being fitted onto opposed series 2 of coupling elements 3 by moving it longitudinally over the top end stops located adjacent the respective recesses, movement of the slider away from its associated recesses effecting disengagement of the series of elements in known manner.

After the sliders have been mounted upon the lengths of stringers, one slider for each pair of opposed series of coupling elements, the two lengths of stringers are then severed across the recesses at positions 12 (Figure 5) intermediate their ends to provide individual sliding clasp fasteners as illustrated in Figure 1 and each having a slider and top and bottom stops.

#### WHAT WE CLAIM IS:—

1. A method of manufacturing sliding clasp fasteners from two lengths of stringers, each having a length of carrier tape supporting a row of coupling elements, comprising a locating the two lengths of stringers in side-by-side relationship with the coupling elements of the lengths of stringers lying adjacent to one another, cutting pairs of opposed recesses in adjacent edges of the lengths of stringers at each of a plurality of positions spaced-apart along the lengths of stringers, each recess extending over a plurality of coupling elements of each length of stringer to divide said row of elements of each length of stringer into successive series of elements, securing plastics material to the lengths of stringers in the vicinity of the recesses after cutting of the recesses, and then inserting at least one slider between each pair of opposed recesses and mounting it upon a series of coupling elements of each length of stringer.

2. A method of manufacturing sliding clasp fasteners according to claim 1, wherein the plastics material secured to the lengths of stringers extends across and covers pairs of opposed recesses and apertures are subsequently provided in the plastics material coincident with the opposed recesses.

3. A method of manufacturing sliding clasp fasteners according to claim 1 or claim 2 wherein the plastics material at at least one end of a recess is formed into a fastener end stop. 15
- 5 4. A method of manufacturing sliding clasp fasteners according to any one of the preceding claims wherein the coupling elements of the two lengths of stringer are in interengaged relationship during cutting of the opposed recesses. 20
- 10 5. A method of manufacturing sliding clasp fasteners according to any one of claims 1, 2 and 3 wherein the coupling elements of the two lengths of stringer are in disengaged relationship during cutting of the opposed recesses. 15
6. A method of manufacturing sliding clasp fasteners substantially as described herein and with reference to Figures 2 to 5 of the accompanying drawings. 20
7. A sliding clasp fastener when made according to the method as claimed in any one of the preceding claims.

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Agent for the Applicants.

Reference has been described in pursuance of Section 9, subsection (1) of the Patents Act, 1949, to patent No. 900,183.

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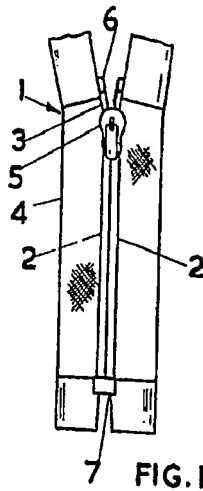


FIG. 1.

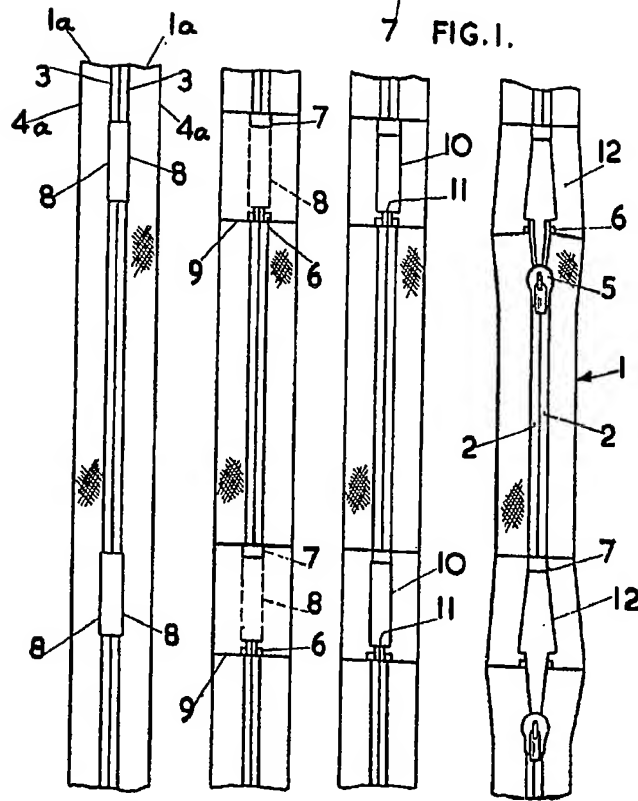


FIG. 2.

FIG. 3.

FIG. 4.

FIG. 5.